# *Horses, Oxen and Technological Innovation*

## *The Use of Draught Animals in English Farming from 1066 to 1500*

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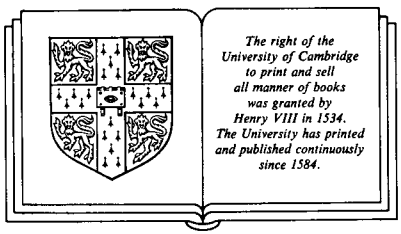


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*Note on maps:* The county boundaries shown are those that existed between 1935 and 1974 (Yorkshire being further divided into its three Ridings on the maps), and it is these boundaries that have been used to determine the counties for the various places mentioned in the text and appendix. It is to be noted, however, that there are some discrepancies between these relatively recent boundaries and those that existed in medieval times, although in general these differences are minor and only affect a few of the places mentioned in this study.

# *Tables*

# *Introduction*

The role of technology in moulding social and economic change is one of the most important – and yet, curiously, often one of the least understood – of historical phenomena. This is particularly the case when dealing with any era before the last two or three centuries, since it is only in the industrial age that a substantial interest in inventions and inventors becomes commonplace in the records and literary tradition of the time. For earlier civilizations references to technological events are relatively rare with a strong emphasis on the eccentric and anecdotal.[1]

However, the lack of readily accessible information concerning technological change in pre-industrial societies does not in any way diminish the importance of the subject. The success (or failure) of technological innovations was as crucial for early civilizations as it is today; and, although the record of these changes is much less prominent for these earlier periods, a progression of notable technological changes from ancient to industrial times can still be discerned.[2] Nevertheless, although the fact that these changes were occurring is not usually denied, the pattern and timing of their dissemination and – more pertinently – their position in the hierarchy of factors promoting social and economic change is often a subject of intense debate.

Accordingly, it is the purpose of this enquiry to examine closely

[1] A typical English example being the story of Eilmar of Malmesbury, who, *c.* 1010, constructed a glider, took off with it from the top of the tower of Malmesbury Abbey and broke both his legs in the resulting crash, after apparently flying for 600 feet. Lynn White, Jr, "The Expansion of Technology 500–1500", in C. M. Cipolla (ed.), *The Middle Ages* (The Fontana Economic History of Europe, i, London, 1972), p. 168.

[2] The most useful compendiums for these changes are C. Singer, E. J. Holmyard, A. R. Hall and T. I. Williams (eds.), *A History of Technology*, esp. vols. i–iii (Oxford, 1954–8) and M. Daumas (ed.), *A History of Technology and Invention*, vols. i–ii (New York, 1962–4).

one of the more well-known of early innovations as it related to medieval English agriculture: that is, the introduction of horses to draught work on English farms as a replacement for oxen. Since horses had theoretical advantages of speed and strength over oxen, their potential for improving traction, both on and off the farm, was substantial, and consequently it is a subject which has already attracted a good deal of important work.[3] It is also a subject upon which historians are very much divided, with some writers seeing the development of horse-power as one of the crucial events in the development of the medieval economy and society, while others claim that it was almost totally irrelevant.[4] Indeed, it is this wide divergence of views over the matter which makes it in many ways an ideal subject to study. It is in order to examine the problem more objectively that a detailed assessment of the introduction of the work-horse to one country over a period of nearly four hundred and fifty years has here been attempted. Particular aims in this study are (1) to determine the proportion of horses versus oxen engaged in English farm work at various stages throughout the medieval and somewhat into the early modern period; (2) to show how these progressive changes in the proportion of horses versus oxen were reflected in changes in practice, particularly regarding ploughing, harrowing and hauling; (3) to investigate the size of the medieval plough-team (with the significance that this had for such matters as the origins of the open-field system); (4) to determine the relationship between plough and vehicle design and the employment of horses and oxen; and (5) to discuss the various considerations influencing demesne[5] and peasant policy as regards the use of horses

[3] Particularly among the French, for which see R. Lefebvre des Noëttes' classic study, *L'Attelage et le Cheval de Selle à Travers les Âges* (Paris, 1931) and more latterly J. Spruytte, *Études Expérimentales sur l'Attelage* (Paris, 1977; now published in English as *Early Harness Systems: Experimental Studies*, London, 1983) and R.-H. and A.-M. Bautier, "Contribution à l'Histoire du Cheval au Moyen Âge", *Bulletin Philologique et Historique* (1976 and 1978).

[4] For the view of horse-power as a crucial medieval development, see Lynn White Jr, *Medieval Technology and Social Change* (Oxford, 1962), pp. 57–69; J. Gimpel, *The Medieval Machine* (London, 1977), pp. 32–8. For the opposing view, see R. H. Hilton and P. H. Sawyer, "Technical Determinism: The Stirrup and the Plough", *Past and Present*, no. 24 (1963), pp. 99–100; R. Trow-Smith, *A History of British Livestock Husbandry to 1700* (London, 1957), pp. 92–3; J. Z. Titow, *English Rural Society 1200–1350* (London, 1969), pp. 38–40.

[5] The demesne here being the lord's farm as opposed to those lands held by his tenants.

and oxen. Finally, the diverse strands raised by these issues will be brought together in a concluding chapter during which – among other things – the horse as a technological innovation will be judged against the various social and economic theories currently extant.

The approach followed in undertaking this programme will be based almost purely upon documentary evidence, including Domesday Book, surveys and extents, leases, exchequer pipe roll material, demesne accounts, detailed lay subsidy tax assessments, court rolls, probate wills and inventories, and sundry other records covering the period from the eleventh to the sixteenth century.[6] Iconographic and archaeological sources, which in themselves could provide the basis for viable studies, are also considered, but reference to them has been limited to work or illustrations already published. Finally, it should be mentioned here that only animals involved in farm work are included in this analysis. Thus, except for occasional references, riding animals are excluded, as are horses and oxen used on the transportation network for other than agricultural purposes. Relevant sources relating to road transport do exist, of course, and will be referred to from time to time, but the rural records are the best for obtaining a comprehensive and consistent view of the problem of medieval traction, including comparisons over time.

[6] Discussion of the failings and merits of each of these sources will occur at the proper time in the body of the study.